

## Chapter - 8

### Cell- Structure and Functions

#### Multiple Choice Questions

**1. Choose the correct statement with respect to unicellular organisms:**

- (a) in unicellular organisms, tissues work in co-ordination to perform different functions.
- (b) unicellular organisms do not require food.
- (c) unicellular organisms respire and reproduce.
- (d) all unicellular organisms move by cilia.

**Soln:**

**Answer is (c) unicellular organisms respire and reproduce.**

**Explanation:**

Unicellular are single celled organisms where single cell performs basic function such as respiration, digestion and reproduction. Option a) is wrong because tissues are group of cells in unicellular there will be only one cell. Option b) is wrong because organisms require food for their survival like any other organisms. Different unicellular uses different organism for locomotion Ex: Cilia, Pseudopodia.

**2. Majority of cells cannot be seen directly with our naked eyes because:**

- (a) organisms are generally unicellular
- (b) cells are microscopic
- (c) cells are present only inside the body
- (d) cells are grouped into tissues

**Soln:**

**Answer is (b) cells are microscopic**

**Explanation:**

Cells are basic unit of life whose size is very small to be seen by our naked eye. Cell varies from nanometer to micrometer which require a microscope to visualize. Hence they are called microscopic structures.

**3. Read the different combinations of terms given below:**

- (a) cell wall, cell membrane, nucleus, plastid
- (b) cell wall, nucleus, ribosome, chromosome
- (c) cell membrane, mitochondria, ribosome, chromosome
- (d) cell membrane, ribosome, mitochondria, chloroplast.

**The correct combination of terms with reference to an animal cell is \_\_\_\_.**

**Soln:**

Answer is (c) cell membrane, mitochondria, ribosome, chromosome

**Explanation:**

Option a) and b) are wrong because they have cell wall which is present only in plant cells. Option d) is wrong because it has chloroplast which are absent in animal cells. Hence the answer is c)

**4. Which one of the following term is not a part of the nucleus?**

- (a) ribosome
- (c) chromosome
- (b) nucleolus
- (d) gene

**Soln:**

Answer is (a) ribosome

**Explanation:**

Ribosomes are the organelles that float in the cytoplasm. Chromosomes are the structures present in the nucleus which are composed of genes. Nucleolus is a part of nucleus which helps in protein synthesis.

**5. A suitable term for the various components of cells is**

- (a) tissue
- (b) cell organelles
- (c) chromosomes
- (d) genes

**Soln:**

Answer is (b) cell organelles

**Explanation:**

Tissue is a group of cells which work together to perform certain function. Chromosomes are thread like structure present in the nucleus which constitutes all the genes. Gene is a unit of inheritance in living organisms. It controls the transfer of a hereditary characteristic from parents to offspring. Genes are made of DNA.

**6. The jelly-like fluid substance present in cells is called**

- (a) protoplasm
- (b) chromosome
- (c) chloroplast
- (d) cytoplasm

**Soln:**

Answer is (d) cytoplasm

**Explanation:**

It is the jelly-like substance present between the cell membrane and the nucleus. Various other components, or organelles, of cells are present in the cytoplasm. These are mitochondria, golgi bodies, ribosomes, etc.

**7. Read the following pairs of examples of organisms:**

- (a) moss and sponge
- (b) yeast and Amoeba
- (c) bacteria and blue-green alga
- (d) penicillium and Spirogyra

**The pair that belongs to the group prokaryotes is\_\_\_\_\_**

**Soln:**

Answer is (c) bacteria and blue-green alga

**Explanation:**

Prokaryotes are the organism which lack true nucleus and cell organelles. Other options provided are contains eukaryotes hence answer is c)

**8. Read the following terms and select the pair that is related to inheritance of characters.**

- (a) cell wall and cell membrane
- (b) chromosome and mitochondria
- (c) chloroplast and cell membrane
- (d) chromosome and genes

**Soln:**

Answer is (d) chromosome and genes

**Explanation:**

Chromosomes and gene are responsible for inheritance of characters. Chromosomes are present in the nucleus. Genes are the parts of chromosomes which consists of DNA.

**9. Choose the correct statement:**

- (a) Genes are located in the chromosomes.
- (b) Cell is located in the nucleus.
- (c) Chromosomes are located in the nucleolus.
- (d) Cell membrane surrounds the nucleus.

**Soln:**

Answer is (a) Genes are located in the chromosomes.

**Explanation:**

Genes are the units of inheritance located in the chromosomes. Nucleus is located in cells but not cell is located in the nucleus. Chromosomes are present in the nucleus not nucleolus. Nucleus is surrounded by nucleus membrane not cell membrane.

**10. Green colour of leaves is due to presence of the pigment\_\_\_\_\_**

- (a) chlorophyll
- (b) ribosomes
- (c) mitochondria
- (d) chloroplast

**Soln:**

Answer is (d) chloroplast

**Explanation:**

Chlorophyll is a pigment present in the chloroplasts. Chlorophyll are responsible for green color of leaves. Chlorophyll can absorb energy from sun and helps in converting it to chemical energy.

**11. The unit of measurement used for expressing dimension (size) of cells is:**

- (a) centimeter
- (b) millimeter
- (c) micrometer
- (d) metre

**Soln:**

Answer is (c) micrometer

**12. The most important function of cell membrane is that it:**

- (a) controls the entry and exit of materials from cells.
- (b) controls only the entry of materials into cells.
- (c) controls only the exit of materials from cells.
- (d) allows entry and exit of materials without any control.

**Soln:**

Answer is (a) controls the entry and exit of materials from cells.

**Explanation:**

Cell membrane facilitate entry and exit of material from cells. Cell membrane also provides shapes to the cells.

**13. Paheli accidentally placed her hand over a flame and immediately pulled it back. She felt the sensation of heat and reacted due to the action of**

- (a) blood cells
- (b) skin surface
- (c) nerve cells
- (d) nucleus of cells

**Soln:**

Answer is (c) nerve cells

**Explanation:**

Nerve cell receives and transmits signals to other body of cell. Our bodies response to external stimuli is due to nerve cells.

**14. Of the following parts of a cell listed below, name the part that is common to plant cell, animal cell and a bacterial cell.**

- (a) chloroplast
- (b) cell wall
- (c) cell membrane
- (d) nucleus

**Soln:**

Answer is (c) cell membrane

**Explanation:**

Chloroplast and cell wall present only in plant cells. Nucleus is absent in bacterial cell hence the answer is (c) cell membrane.

**15. The thread-like structures present in the nucleus are**

- (a) nucleolus
- (b) chromosomes
- (c) genes
- (d) ribosomes

**Soln:**

Answer is (b) chromosomes

**Explanation:**

Nucleolus is a spherical body present on the nucleus. Genes are present on chromosomes which help in inheritance or transfer of characters from the parents to the offspring. Ribosomes are present in the cytoplasm. Hence the answer is (b) chromosomes.

**16. Identify the statement which is true for cells.**

- (a) Cells can be easily seen with naked eyes.
- (b) Insect's egg is not a cell.
- (c) A single cell can perform all the functions in a unicellular organism.
- (d) The size and shape of cells is uniform in multicellular organisms

**Soln:**

Answer is (c) A single cell can perform all the functions in a unicellular organism.

**Explanation:**

Cells can only be seen with microscopes hence option a) is wrong. Insect's egg is a cell so option b) is wrong. Cells in multicellular organism are in different size and shapes therefore option d) is wrong.

**17. Which of the following is not a cell?**

- (a) Red Blood Corpuscle (RBC)
- (b) bacterium
- (c) spermatozoa
- (d) virus

**Soln:**

Answer is (d) virus

**Explanation:**

Virus is considered as intermediate between living and non-living. It is not considered as cell because it cannot replicate or perform life processes outside host cell.

**18. Which of the following feature will help you in distinguishing a plant cell from an animal cell?**

- (a) cell wall
- (b) cell membrane
- (c) mitochondria
- (d) nucleus

**Soln:**

Answer is (a) cell wall

**Explanation:**

Cell wall is present only in plant cell whereas cell wall, mitochondria and nucleus are present in both plant and animal cells. Hence cell wall help indistinguishing a plant cell from an animal cell.

**19. Under a microscope Paheli observes a cell that has a cell wall but no distinct nucleus. The cell that she observes is**

- (a) a plant cell**
- (b) an animal cell**
- (c) a nerve cell**
- (d) a bacterial cell**

**Soln:**

Answer is (d) a bacterial cell

**Explanation:**

Bacterial cell is a prokaryote and it lacks distinct nucleus and cell organelles. Hence the answer is (d) a bacterial cell.

**20. Cheek cells do not have \_\_\_\_\_**

- (a) cell membrane**
- (b) nucleus**
- (c) golgi apparatus**
- (d) plastids**

**Soln:**

Answer is (d) plastids

**Explanation:**

Plastids are present only in plant cells. Cheeks cells are present only in animals hence the answer is (d) plastids.

**21. Identify the correct statement.**

- (a) Tissue is a group of dissimilar cells.**
- (b) An organ consists of similar cells.**
- (c) Vacuoles are not found in plant cells.**
- (d) Prokaryotes do not have nucleus.**

**Soln:**

Answer is (d) Prokaryotes do not have nucleus.

**Explanation:**

Prokaryotes are the organism which lack true nucleus and cell organelles.

**22. Which of the following statements are not true for eukaryotic cells?**

- (i) They do not have a nuclear membrane.
- (ii) They have a well organised nucleus.
- (iii) They have a nuclear membrane.
- (iv) Blue green algae are eukaryotic cells

**Soln:**

**Answer is (iv) Blue green algae are eukaryotic cells**

**Explanation:**

Blue green algae is a bacteria which comes under prokaryotes hence statement d) is wrong.

**23. Identify the correct statement about cells.**

- (a) All the cells have nucleus.
- (b) Cells of an organ have similar structure.
- (c) Cells of a tissue have similar structure.
- (d) Shape of all types of cells is round.

**Soln:**

**Answer is (c) Cells of a tissue have similar structure.**

**Explanation:**

Only eukaryotic cells have well defined nucleus hence option a) is wrong. Cells of an organ comprises of different types of cell so statement b) is wrong. Cells are of different shapes and size hence option d) is wrong.

**24. The table given below has certain terms and four blank spaces named A, B, C and D.**

Cell	Feature/Part	Function
Amoeba	A	Movement
Plant cell	Plastid	B
C	Spindle Shaped	Contraction
Nerve Cell	D	Stimuli and response

**From the options given below choose the correct combination of terms.**

- (a) A-Pseudopodia; B-Respirations; C-Muscle cell; D-Branched
- (b) A-Pseudopodia; B-Photosynthesis; C-Muscle cell; D-Branched
- (c) A-Contractile vacuole; B-Photosynthesis; C-Blood cell; D-Spindle shaped
- (d) A-Pseudopodia; B-Photosynthesis; C-Cheek cell; D-Spindle shaped



**Soln:**

Answer is (b) A-Pseudopodia; B-Photosynthesis; C-Muscle cell; D-Branched

### **Very Short Answer Questions**

**25. In leaves, name the cell organelle and pigment that is responsible for green colour.**

**Soln:**

Answer is Chloroplast and Chlorophyll

**26. The instrument used to observe cells is \_\_\_\_\_**

**Soln:**

Microscope

**27. We do not sense any pain when we clip our nails or cut our hair. Why?**

**Soln:**

Nails and hairs are made up of dead cell which are not connected with nerve cells. Hence we do not feel the pain when we cut our nails or hair.

**28. In a cell, where are the genes located?**

**Soln:**

Genes are located in Chromosomes which are located in the nucleus.

**29. Amoeba and Paramecium belong to which category of organisms?**

**Soln:**

Answer is Protozoans

**30. What are the functions of cell wall in plant cells?**

**Soln:**

Functions of cellwall is as follows

- Acts as protective layer
- It gives shape to the cell

### Short Answer Questions

31. Is the following statement correct? If it is wrong, correct the statement Statement :

“Unicellular organisms do not respire, only multicellular organisms respire”

Soln:

The statement is wrong because all kind of organisms respire.

32. Match the terms given in column I with their functions given in column II and fill the blanks given below the table:

Column I	Column II
A. Chloroplast	i) carries hereditary characters
B. Cell membrane	ii) controls the activities of cells
C. Nucleus	iii) site of photosynthesis
D. Chromosome	iv) controls the movement of materials into and out of cells.

Soln:

Column I	Column II
A. Chloroplast	iii) site of photosynthesis
B. Cell membrane	iv) controls the movement of materials into and out of cells.
C. Nucleus	ii) controls the activities of cells
D. Chromosome	i) carries hereditary characters

33. Observe the following diagram given as Fig. 8.1.



Fig. 8.1

**Answer the following questions.**

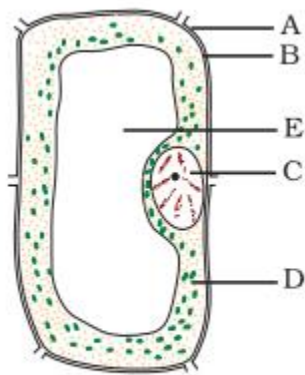
**A. Does it represent a plant cell or an animal cell?**

**B. Does it represent a prokaryotic cell or an eukaryotic cell?**

**Soln:**

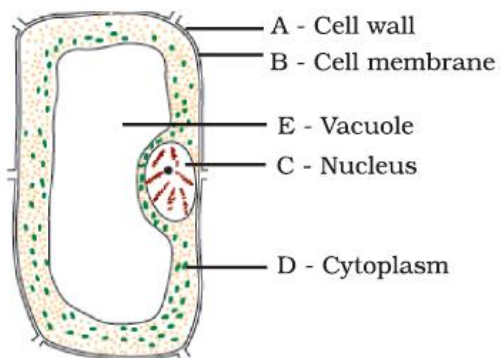
- a) Figure represent an animal cell
- b) This is an eukaryotic cell

**34. Label the parts A to E in the given as Fig. 8.2 diagram.**



**Fig. 8.2**

**Soln:**



35. Classify the following terms into cells, tissues and organs and write in the tabular column given below.

RBC, WBC, Nerve cell, blood, muscle, blood vessels, brain, heart, hand

Cell	Tissue	Organ

**Soln:**

Cell	Tissue	Organ
RBC	Blood	Blood vessels
WBC	Muscle	Brain
Nerve Cell	Nerve	Heart
		Hand

36. Read the following statements and write the appropriate term against each statement.

A. I control the functions of a cell. Who am I? .....

B. I am like a policeman. I do not allow anything and everything to get in and out of the cell. Who am I? .....

C. I transfer characters from parents to offsprings. Who am I? .....

**Soln:**

A- Nucleus; B-Cell membrane; C-Genes/Chromosomes

37. Fill in the blanks with the terms given in the box below:

Nucleus, chromosomes, cell wall, cell membrane, protoplasm, cytoplasm, ribosome, cell organelles

The outermost layer of plant cells is the (a)\_\_\_\_\_ beneath which is the (b)\_\_\_\_\_. The term (c)\_\_\_\_\_ refers to the jelly-like substance containing all the (d)\_\_\_\_\_. The (e)\_\_\_\_\_ contains thread-like structures called (f)\_\_\_\_\_.

**Soln:**

a-cell wall; b-cell membrane; c-cytoplasm; d-cell organelles; e-nucleus; f-chromosomes.

The outermost layer of plant cells is the (a) cell wall beneath which is the (b) cell membrane. The term (c) cytoplasm refers to the jelly-like substance containing all the (d) cell organelles. The (e) nucleus contains thread-like structures called (f) chromosomes.

### Long Answer Questions

**38. Cells consist of many organelles, yet we do not call any of these organelles as structural and functional unit of living organisms. Explain.**

**Soln:**

Cell organelles like mitochondria, ribosomes, nucleus, etc, have specific functions and do specific functions, however they can not be referred to functional unit of cell. This is because they will perform only specific functions within a living cell. They can not act as units. The nuclei, on the contrary has independent existence. It's the smallest, structural and useful unit of life.

**39. Why do plant cells have an additional layer surrounding the cell membrane? What is this layer known as?**

**Soln:**

Plants do not have the property of moving hence they need protection against variations in temperature, high wind speed, atmospheric moisture, etc. For this purpose plant cells have a special membrane called as cell wall. This additional membrane also provides the shape for the plant cell.

**40. The size of the cells of an organism has no relation with the size of its body. Do you agree? Give reason for your answer.**

**Soln:**

Size of the cells of an organism has no relation with the size of its body because cell size of rat and cell size of elephant will not be different in size. The cell organelles like mitochondria, Golgi complex, ribosomes, nucleus, etc., have specific functions and carry out specific functions in a cell but they cannot be called as the structural and functional units of living organisms. This is because they can function only when present inside a living cell. They cannot act as independent units. The nuclei, on the contrary has independent existence. It is the smallest, structural and functional unit of life.